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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Steven L. Goodman

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EXAMINER

FERNANDEZ, SUSAN EMILY

ART UNIT

PAPER NUMBER

1651

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,869	Applicant(s) GOODMAN ET AL.	
	Examiner SUSAN E. FERNANDEZ	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Art Unit: 1651

DETAILED ACTION

The preliminary amendment filed January 27, 2006, has been received and entered.

Claims 1-28 are pending and examined on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 is rendered indefinite by the recitation “the specimen-coated substrate” in lines 2 and 3 since it lacks antecedent basis. Parent claim 1 makes no mention of any substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

Art Unit: 1651

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 12, 14-22, and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. (US 2001/0044156) in view of Ban et al. (Rubber World. 1993. 207(4): 20-22).

Kelly et al. discloses a method of preparing a specimen for microanalysis wherein a study specimen is formed from a larger study object to remove it and situate the study specimen on a second study object, and then regions are formed on the study specimen suitable for microanalysis by an atom probe (claim 1). According to Kelly et al., "...the second study object may be formed of a material which promotes electrostatic attraction of the study specimen to the second study object (either by itself or with the assistance of an applied charge)..." (page 2, paragraph [0012]). Therefore, the specimen is indeed embedded within an electrically conductive matrix to yield an embedded specimen, and regions are formed on the embedded specimen into shapes suitable for microanalysis by an atom probe. The study specimens can be removed, wherein study regions can be formed on the removed study specimens prior to microanalysis. See page, 5, paragraph [0034] and Figure 5 wherein study regions suitable for atom probe microanalysis were formed by Focused Ion Beam (FIB) milling or other etching methods. Therefore, limitations in instant claims 1, 2, 14, 21, 24, 25, and 27 are met. Microanalysis by local electrode atom probe microscopy is also taught, as required by instant

Art Unit: 1651

claim 26. Further still, limitations of instant claim 12 are taught as Kelly et al. teaches that a protective layer may be applied to the study object (page 7, paragraph [0045]).

Paragraph [0050] on pages 7 and 8 indicates that biological and organic materials can be used for study specimens and/or study objects. These materials require special processing, such as chemical fixation, dehydration, and drying by means known in the art to prepare them for scanning electron microscopy. For instance, they may be coated with carbon or evaporated metals prior to FIB etching to create the proper geometry for imaging. Given these teachings, the limitations of instant claims 15, 18, 19, and 22 are met.

Kelly et al. teaches that "...prior to milling, etching, or otherwise forming study specimens, recesses in study objects, etc., the operator may apply a protective layer to the study object and/or the area of the study specimen..." (page 7, paragraph [0045]). Therefore, limitations of instant claims 16 and 17 are taught by the reference.

Kelly et al. differs from the claimed invention in that it does not expressly disclose that the electrically conductive matrix (the second study object) in which the specimen is embedded is a polymer matrix. Moreover, Kelly et al. fails to disclose that the polymer matrix is treated with a metal-containing compound, such as osmium tetroxide and ruthenium tetroxide, which increases the conductivity of the polymer matrix.

Ban et al. discloses using microscopy techniques to study the morphology of polymer blends (abstract). Transmission electron microscopy (TEM) and scanning electron microscopy (SEM) were used for the study (abstract). In order to obtain polymer domain contrast in the TEM or SEM, both osmium tetroxide (OsO₄) and ruthenium tetroxide (RuO₄) stainings were

Art Unit: 1651

performed (page 20, first column, last paragraph). The study determined that such stainings helped to locate the polymer domains in triblends (page 22, last paragraph).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used a polymer as the second study object of the Kelly invention. One of ordinary skill in the art would have been motivated to do this because Kelly et al. points out that "...it is often useful to be able to microscopically analyze the structures of...multilayered **polymeric**, organic and/or biochemical based thin film devices..." (page 1, paragraph [0003], emphasis added). Therefore claims 1, 2, 14, 18, 19, 21, 22, and 24-27 are rendered obvious.

Further still, it would have been obvious to have treated the polymer with osmium tetroxide and ruthenium tetroxide. One of ordinary skill in the art would have been motivated to do this since there would have been a reasonable expectation of success that since such treatment helps to study the morphology of polymer blends by TEM and SEM, the same would have been true to study the morphology by atom probe microscopy. Moreover, Kelly et al. states that "...biological and organic materials may require chemical fixation, dehydration, and drying by means known in the art to prepare them for scanning electron microscopy." Kelly et al. notes that other microanalysis such as TEM analysis can be performed with their claimed invention. Thus, claims 3-6 and 28 are rendered obvious.

Given that Kelly et al. teaches that inorganic, biological, and organic materials may be used for study specimens and/or study objects (page 7, paragraph [0050]), a variety of materials are encompassed by the Kelly invention, including proteins and hydrogels. Therefore, instant claims 7 and 20 are also rendered obvious.

A holding of obviousness is clearly required.

Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. and Ban et al. as applied to claims 1-7, 12, 14-22, and 24-28 above, and further in view of Tripathy et al. and Sugimoto et al. (US 5,552,216).

As discussed above, Kelly et al. and Ban et al. render claims 1-7, 12, 14-22, and 24-28 obvious. However, they do not disclose that the specimen is mixed with a corresponding monomeric compound to thereafter polymerize the monomeric compound to yield the electrically conductive polymer matrix.

Tripathy et al. discloses a method of forming water-soluble, electrically conductive and optically active polymers (column 1, lines 65-67). The method comprises the step of combining a redox monomer with a water-based solvent and an enzyme to cause polymerization (claim 1). Water-soluble monomers can be combined with water-insoluble monomers for the method (column 2, lines 14-17).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have combined the specimen of Kelly et al. with water-soluble and water-insoluble monomers in a water-based solvent for the polymerization reaction disclosed in Tripathy et al. One of ordinary skill in the art would have been motivated to do this since this would have permitted the formation of an electrically conductive polymer matrix. Therefore, instant claims 8-10 are rendered obvious.

Kelly et al. and Ban et al. also differ from the claimed invention in that they do not disclose that the electrically conductive polymer matrix comprises polythiophenes, polyanilines, polypyrroles, and combinations thereof.

Art Unit: 1651

Sugimoto et al. discloses that polythiophene, polypyrrole, and polyaniline are known electrically conductive polymers.

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used polythiophenes, polyanilines, polypyrroles, and combinations thereof in the electrically conductive polymer matrix of the invention rendered obvious by Kelly et al. and Ban et al. One of ordinary skill in the art would have been motivated to do this since these specific polymers are known to be electrically conductive. Thus, instant claim 11 is rendered obvious.

It would have been obvious to have used the microanalyzed embedded specimen in devices as Kelly et al. points out that microscopic analysis is performed on structures of various types of devices (page 1, paragraph [0003]). Therefore, instant claim 13 is rendered obvious.

As discussed above, Kelly et al. teaches that chemical fixation may be used for biological and organic materials (page 8, paragraph [0050]). Therefore, it would have been obvious that cross-links would have formed between the specimen and the matrix, within the specimen, and between the specimen and the substrate. Thus, instant claim 23 is rendered obvious.

A holding of obviousness is clearly required.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN E. FERNANDEZ whose telephone number is (571)272-3444. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.

Art Unit: 1651

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford/
Primary Examiner, Art Unit 1651

Susan E. Fernandez
Examiner
Art Unit 1651

sef